

(19) World Intellectual Property Organization  
International Bureau(43) International Publication Date  
5 December 2002 (05.12.2002)

PCT

(10) International Publication Number  
WO 02/096292 A1

(51) International Patent Classification?: A61B 5/103

(21) International Application Number: PCT/EP02/05093

(22) International Filing Date: 6 May 2002 (06.05.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/294,461 30 May 2001 (30.05.2001) US

(71) Applicant (for AE, AG, AU, BB, BZ, CA, CY, GB, GD, GH, GM, IE, IL, KE, LC, LK, LS, MN, MW, NZ, OM, SD, SG, SL, SZ, TT, TZ, UG, ZA, ZM, ZW only): UNILEVER PLC [GB/GB]; Unilever House, Blackfriars, London EC4P 4BQ (GB).

(71) Applicant (for AL, AM, AT, AZ, BA, BE, BF, BG, BJ, BR, BY, CF, CG, CH, CI, CM, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, FR, GA, GE, GN, GQ, GR, GW, HR, HU, ID, IS, IT, JP, KG, KP, KR, KZ, LR, LT, LU, LV, MA, MC, MD, MG, MK, ML, MR, MX, MZ, NE, NL, NO, PH, PL, PT, RO, RU, SE, SI, SK, SN, TD, TG, TJ, TM, TN, TR, UA, UZ, VN, YU only): UNILEVER NV [NL/NL]; Weena 455, NL-3013 AL Rotterdam (NL).

(71) Applicant (for IN only): HINDUSTAN LEVER LIMITED [IN/IN]; Hindustan Lever House, 165/166 Backbay Reclamation, Maharashtra, 400 020 Mumbai (IN).

(72) Inventors: TELESKA, Josephine; Unilever Home &amp; Personal Care USA, 40 Merritt Boulevard, Trumbull, CT

06611 (US). MURRAY, Liam, Anthony; Unilever Home &amp; Personal Care USA, 40 Merritt Boulevard, Trumbull, CT 06611 (US). GOTT, Robert, Edward; Unilever Home &amp; Personal Care USA, 40 Merritt Boulevard, Trumbull, CT 06611 (US). SLAVTCHEFF, Craig, Stephen; Unilever Home &amp; Personal Care USA, 40 Merritt Boulevard, Trumbull, CT 06611 (US).

(74) Agents: ELLIOTT, Peter, William et al.; Unilever PLC, Patent Department, Colworth House, Sharnbrook, Bedford, Bedfordshire MK44 1LQ (GB).

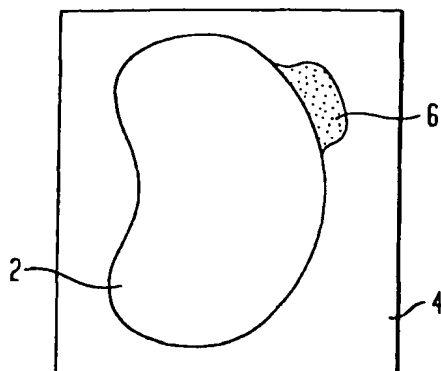
(81) Designated States (national): AE, AG, AL, AM, AT (utility model), AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ (utility model), CZ, DE (utility model), DE, DK (utility model), DK, DM, DZ, EC, EE (utility model), EE, ES, FI (utility model), FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK (utility model), SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:  
— with international search report

[Continued on next page]

(54) Title: WRINKLE INDICATOR TAPE STRIP AND METHOD OF USING THE SAME



(57) Abstract: A test kit and method for visualizing fine lines and wrinkles is provided, the kit including a transparent strip (2) with an adhesive on one surface thereof and an imaging substrate with at least one darkened glossy area for receiving the transparent strip. Written instructions are provided in the kit. These advise a consumer to place the adhesive surface of the strip against a skin area requiring measurement. Thereafter the strip is removed and placed against the darkened area of the substrate. Topographical features of the skin can be viewed through the transparent strip with the transferred skin image onto the blackened background. A cosmetic anti-aging product can be applied to the skin over a period of time. Beneficial changes caused by the product are visualized through the test strip as periodic measurements are taken.



---

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

## WRINKLE INDICATOR TAPE STRIP AND METHOD OF USING THE SAME

The invention concerns a test strip for evaluating changes  
5 in skin wrinkles, especially in the context of measuring the  
efficacy of anti-aging cosmetic products.

A number of publications have disclosed test devices for the  
lay person to self-diagnose their skin conditions. U.S.  
10 Patent 3,571,947 (Maddison et al.) discloses a system for  
identifying blemishes. A flexible, compliant film of plastic  
is imprinted with pictorials of various types of common  
blemishes. These reflect different dermal diseases. They  
are cross-referenced with a handbook identifying the diseases  
15 from the type of blemish. Cross-indexing treatments further  
provides a suggested treatment to remedy the medical  
condition.

U.S. Patent 5,727,949 (Bar-Or et al.) provides a dual ring  
panel reference card. The panels are mounted for relative  
20 movement whereby a selected diagnostic characteristic of a  
skin problem can be aligned with a second diagnostic  
characteristic and a determinable prognosis revealed from the  
specific paired characteristics.

CuDerm Corporation has developed a simple diagnostic test to  
25 determine the degree of skin dryness. CuDerm utilizes  
adhesive discs (D-Squame) capable of removing a small section  
of squameous cells (skin cells) and compares the results  
against a chart. The disc is a transparent plastic with  
adhesive on one side. The test involves placing the adhesive  
30 surface of the disc against a user's cheek, peeling off the

- 2 -

disc and placing same on a dark background card. Flakes from the skin stick to the adhesive surface and are visualized against the dark background. Other than loose flakes, no topographical imprint is ever taken from the evaluated user's skin.

There are many cosmetic products sold which advertise certain skin benefits. Consumers usually cannot easily discern whether the claimed benefit is actually delivered. Even if perceivable, these actives impart an effect which may emerge only slowly over a period of time. Anti-aging actives are particularly illustrative. Facial fine lines and wrinkles can be minimized with actives such as alpha hydroxycarboxylic acids and/or retinol, to provide some visible improvement over an extended application period. They don't function instantaneously.

Accordingly, it is an advantage of the present invention to provide a low-cost simple test for a consumer to self-evaluate a cosmetic product's anti-aging benefits over a prolonged application period.

Another advantage of the present invention is to provide a low-cost simple self-evaluation tool for measuring changes in fine lines and wrinkles on the face or other aging susceptible parts of the human dermis.

A test kit for visualizing fine lines and wrinkles on a person's skin is provided which includes:

- (i) a transparent strip provided with an adhesive on one surface thereof, the adhesive having sufficient tack to

- 3 -

maintain an imprint of fine lines and wrinkles after removal of the strip from the skin;

(ii) an imaging substrate with at least one darkened area for receiving the transparent strip; and

5 (iii) written instructions within the kit directing a consumer to place the adhesive surface of the strip against a skin area requiring measurement, to remove the strip and place same against the darkened area of the substrate, to repeat the aforesaid procedure at a  
10 future time followed by comparison of patterns resultant from the first and second strip applications to the skin.

Further, there is provided a method for evaluating efficacy of an anti-aging cosmetic product, the method including:

15 (A) providing a kit which includes:

(i) a transparent strip provided with an adhesive on one surface thereof, the adhesive having sufficient tack to maintain an imprint of fine lines and wrinkles after removal of the strip  
20 from the skin; and

(ii) an imaging substrate with at least one darkened area for receiving the transparent strip;

(B) applying the cosmetic product to the skin;

- 4 -

(C) placing the adhesive surface of the strip against the skin treated with the cosmetic product in step (B);

5 (D) removing the strip and placing same against one of the at least darkened areas of the substrate; and

(E) repeating steps (C) and (D) at a future time followed by comparison of patterns resultant from the first and second strip applications to the skin.

10 Additional advantages, features and benefits of the present invention will become more readily apparent from consideration of the drawing in which:

Fig. 1 is a first embodiment of an application strip according to the present invention;

15 Fig. 2 is a second embodiment of an application strip according to the present invention; and

Fig. 3 is the application strip of the embodiment shown in Fig. 1 subsequent to being placed on the skin, removed therefrom and mounted on a darkened field reading card.

20 Now there has been found a simple diagnostic test for allowing a consumer to evaluate the claimed effectiveness of anti-aging cosmetic products. Effectiveness of the anti-aging result can be monitored over a period of time through an inexpensive kit. The kit employs a transparent plastic  
25 strip coated with a transparent adhesive layer. When applied to a wrinkle prone area of the face or body, the adhesive layer accepts a topological wrinkle imprint.

- 5 -

Removal of the strip from this wrinkle area can then be imaged by placement onto a darkened, preferably black field.

Fig. 1 illustrates a transparent strip 2 adhesively attached to a release backing 4. Strip 2 is kidney-shaped for  
5 placement adjacent either the right or left eye so as to cover the periorbital canthus (crow's foot area). This curvilinear shape allows for maximum coverage around an outer corner of the eye.

A tab 6 is attached to the strip 2. The tab serves as a  
10 gripping structure. Separation of the strip from the release backing is facilitated by initiating removal at the tab. The opaque, preferably black coloration of the tab in contrast to the transparency of the strip signals to a user the difference of this area and cues the user to start  
15 lifting at that point.

Fig. 2 illustrates a second embodiment of a more elongate double lobed shape. Strip 2' is removably adhered onto a release backing 4'. Tab 6' is oriented between both lobes of the strip and lies along an axis of symmetry bisecting  
20 the strip. The elongate nature of this embodiment even more than the first embodiment ensures that eyebrow hairs are not trapped under the adhesive when applied. It is undesirable to capture hairs. Any hairs caught in the adhesive may cause pain upon the strip being removed. This is considered  
25 an undesirable ouch factor.

In the procedure for testing efficacy of various anti-aging products, the strip is removed from its release backing. Thereupon it is placed along an area of skin to be imaged for its topography. Facial areas are primarily intended for

- 6 -

evaluation, and more particularly areas surrounding the eye. Subsequently, the strip is removed and placed upon an imaging card 8. The dark, preferably black background of the card fixes the imprint while the transparent strip  
5 allows a view of that imprint. Fig. 3 illustrates the strip showing fine lines and wrinkles 10 being visualized against the black background of the imaging card.

Subsequent to a baseline analysis of fine lines and wrinkles, treatment is begun with a selected cosmetic anti-  
10 aging product. Treatment is continued for a period of time sufficient to allow the product to treat the signs of aging.

A second imaging field is placed adjacent to the first. After the treatment period of time, such as four weeks, another imprint is taken by a second transparent strip 21.  
15 If the cosmetic product is properly functioning, fewer fine lines and wrinkles 11 will appear on the imaged second field. This procedure can then be repeated at six or eight weeks or at any further time interval. Each test will employ a fresh strip and new blackened area on the same or  
20 another image card.

In a preferred embodiment, the kit includes a dusting device. Most preferred is a dusting paper which is formed of a cellulosic substrate supporting a water-dispersible titanium dioxide embedded therein. This device is available  
25 from Leading Plus International, Taiwan. Prior to applying the adhesive transparent strip, the target area of the face is rubbed with the dusting paper. Powdered titanium dioxide is deposited thereon as an even film. Contact subsequently with the adhesive strip allows the latter to preferentially



- 7 -

adhere to powder deposit along ridges of the fine lines and wrinkles. An image in powder form of those fine lines and wrinkles is thereby obtained. Although a paper delivery system as described above is preferred, dusting powder can  
5 also be delivered from a shaker container similar to those for the dispensing of talcum powder.

Strips for use in the present invention will be transparent articles allowing observation of any patterns on a lower surface thereof. Suitable materials for the strip are  
10 plastics or cellulose of any variety which can be formed as transparent films. Typically the plastic may be selected from polyethylene, polypropylene, polystyrene, polyester, polycarbonate, polyacrylate, polyvinyl chloride, polyvinyl alcohol and polybutene. Not only homopolymers but  
15 copolymers may be utilized for the strip material.

Copolymers may be formed from such monomers as C<sub>2</sub>-C<sub>10</sub> olefins, vinyl chloride, acrylates and styrene constructed through free-radical polymerization. Condensation plastics may also be utilized in the formation of copolymers wherein  
20 the monomers may be selected from C<sub>2</sub>-C<sub>10</sub> dicarboxylic acids, C<sub>2</sub>-C<sub>10</sub> polyols, C<sub>2</sub>-C<sub>6</sub> alkoxylates and combinations thereof. Polyethylene, polypropylene and polyester terephthalate are the preferred plastic substrates for forming the strip.

The thickness of the strip may range anywhere from 0.001 to  
25 2 mm, preferably from 0.01 to 1 mm, more preferably from 0.1 to 0.5 mm and optimally from 0.5 to 0.8 mm.

The backing is typically made from a material and in a manner that is generally impervious to the adhesive. The

- 8 -

backing may be elastic or non-elastic but preferably the former. Flexibility allows easier removal of the adhesive strip. The backing can be formed from a variety of materials including organic polymers and cellulose. A  
5 release coating such as a silicone may be placed on an upper surface of the backing to ease removal of the adjacent adhesive strip.

The adhesive will be a pressure sensitive type preferably as a layer with an average thickness from 0.01 mm to 3 mm,  
10 preferably from 0.05 mm to 2 mm, more preferably from 0.1 mm to 1 mm, optimally from 0.4 mm to 0.8 mm.

Pressure sensitive adhesives suitable for use in this invention are coatable adhesives. A wide variety of coatable pressure sensitive adhesives can be used, such as  
15 solvent coatable, hot melt coatable, as well as latex PSA's that are coatable out of water. Also, solventless curable adhesives (often referred to as 100% solids) can be used. Where thicker adhesive coatings are desired, it may be desirable either to apply multiple layers of the adhesive,  
20 hot melt coat, or to photopolymerize the adhesive in situ. Specific examples of pressure sensitive adhesives include acrylates, such as isooctyl acrylate/acrylic acid copolymers, tackified acrylates, and plasticizer-containing acrylates such as those disclosed in U.S. Pat. No. 4,946,742  
25 (Landin); natural or synthetic rubber resins, including thermoset rubbers as well as thermoplastic rubbers and elastomers, such as nitrile rubbers (e.g., acrylonitrile-butadiene), styrene-butadiene, styrene-isoprene, styrene-butadiene-styrene, styrene-isoprene-styrene, and natural

- 9 -

rubber; silicone-based adhesives, such as polysiloxanes; polyolefins; polyesters; polyamides; and polyurethanes.

Particularly preferred are the acrylic type pressure sensitive adhesives. Most especially a pressure sensitive adhesive with a low tack value. These materials are commercially available under the Flexcon® brand.

Relative thickness of the strip to the adhesive may range from 1:200 to 200:1, preferably from 1:10 to 10:1, optimally from 2:1 to 1:2. Relative weight ratio of the strip to the adhesive may range from 1:200 to 200:1, preferably from 1:10 to 10:1, optimally from 2:1 to 1:2.

Anti-aging cosmetic products of this invention may contain one or more anti-aging actives and a cosmetic carrier. Illustrative actives are alpha- and beta-hydroxyacids, retinoids (e.g. retinol and retinyl palmitate), ascorbic acid and derivatives (e.g. ascorbyl tetraisopalmitate, magnesium ascorbyl phosphate), lipoic acid, green tea, tocopherol and derivatives, dihydroepiandrosterone (DHEA) and combinations thereof. Amounts may range from 0.00001 to 10% by weight of the product. Carriers may include water, silicones, natural and synthetic esters (e.g. triglycerides, lanolin and fatty acid esters), hydrocarbons, propellants, thickeners, surfactants and combinations thereof. Amounts may range from 5 to 99.9% by weight of the product.

Anti-aging cosmetic products may take various forms including creams, lotions, wipes, aerosols, powders and transdermal patches.

- 10 -

Except in the operating and comparative examples, or where otherwise explicitly indicated, all numbers in this description indicating amounts of material ought to be understood as modified by the word "about".

- 5 The term "comprising" is meant not to be limiting to any subsequently stated elements but rather to encompass non-specified elements of major or minor functional importance. In other words the listed steps, elements or options need not be exhaustive. Whenever the words "including" or
- 10 "having" are used, these terms are meant to be equivalent to "comprising" as defined above.

All parts, percentages and proportions referred to herein and in the appended claims are by weight unless otherwise illustrated.

- 11 -

CLAIMS

1. A test kit for visualizing fine lines and wrinkles on a person's skin comprising:

- 5           (i)    a transparent strip provided with an adhesive on one surface thereof, the adhesive having sufficient tack to maintain an imprint of fine lines and wrinkles after removal of the strip from the skin;
- 10           (ii)   an imaging substrate with at least one darkened area for receiving the transparent strip; and
- (iii) written instructions within the kit directing a consumer to place the adhesive surface of the
- 15           strip against a skin area requiring measurement, to remove the strip and place same against the darkened area of the substrate, to repeat the aforesaid procedure at a future time followed by comparison of patterns resultant
- 20           from the first and second strip applications to the skin.
2. The kit according to claim 1 wherein the adhesive is a pressure sensitive adhesive.
3. The kit according to claim 2 wherein the adhesive is an
- 25           acrylate polymer.

- 12 -

4. A method for evaluating efficacy of an anti-aging cosmetic product, the method comprising:

(A) providing a kit which comprises:

5 (i) a transparent strip provided with an adhesive on one surface thereof, the adhesive having sufficient tack to maintain an imprint of fine lines and wrinkles after removal of the strip from the skin; and

10 (ii) an imaging substrate with at least one darkened area for receiving the transparent strip;

(B) applying the cosmetic product to the skin;

15 (C) placing the adhesive surface of the strip against the skin treated with the cosmetic product in step (B);

(D) removing the strip and placing same against one of the at least darkened areas of the substrate; and

20 (E) repeating steps (C) and (D) at a future time followed by comparison of patterns resultant from the first and second strip applications to the skin.

5. The method according to claim 4 further comprising  
25 applying a dusting powder against the skin prior to placement thereon of the adhesive surface of the strip.

- 13 -

6. The method according to claim 5 wherein the dusting powder is carried to the skin on a paper.
7. The method according to claim 5 wherein the dusting powder is a water-dispersible titanium dioxide.

Fig.1.

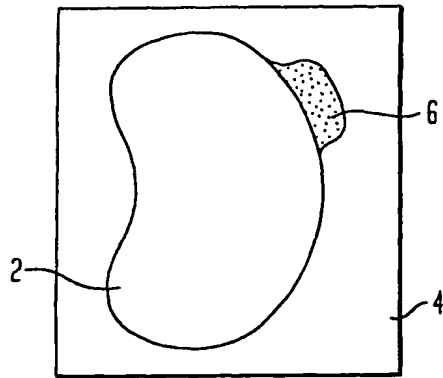


Fig.2.

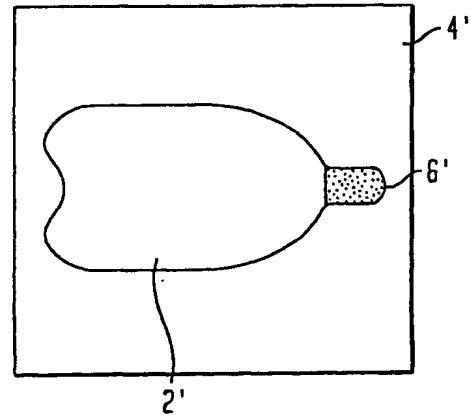
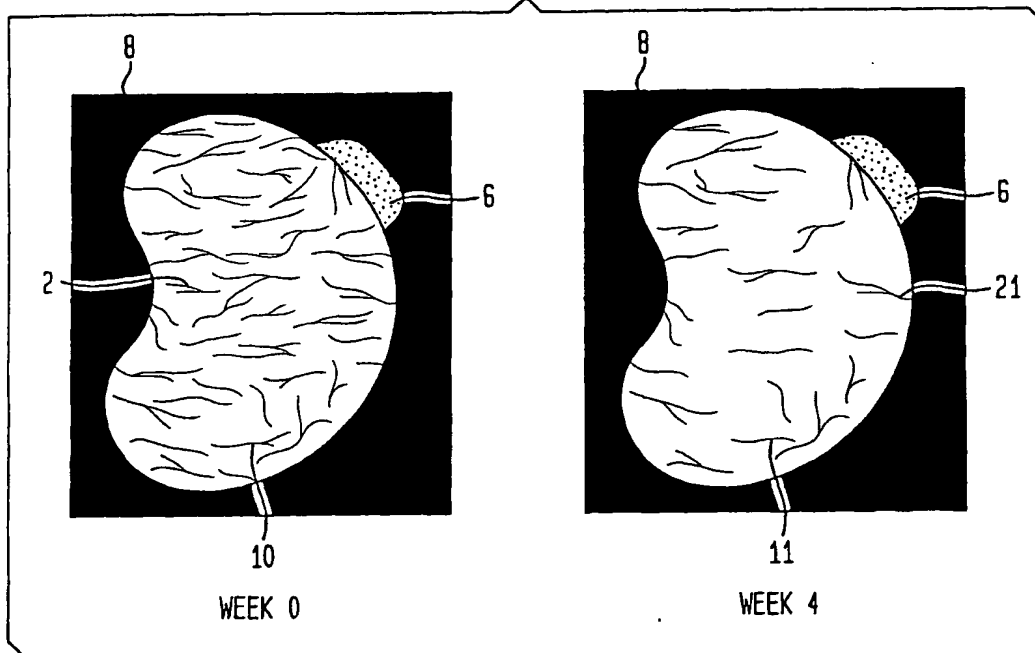


Fig.3.





## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP 02/05093

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 A61B5/103

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 088 502 A (MILLER DAVID L) 18 February 1992 (1992-02-18) column 1, line 64 -column 2, line 36; figure	1-7
A	FR 2 063 743 A (BOUYER HENRI) 9 July 1971 (1971-07-09) page 1, line 9-23 page 1, line 27-30; figures A,8	1-7
A	US 5 684 573 A (KHAZAKA GABRIEL ET AL) 4 November 1997 (1997-11-04) column 1, line 8-15 column 3, line 15 -column 4, line 15; figures 2-5	1-4

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

\* Special categories of cited documents:

\*A\* document defining the general state of the art which is not considered to be of particular relevance

\*E\* earlier document but published on or after the international filing date

\*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

\*O\* document referring to an oral disclosure, use, exhibition or other means

\*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

\*A\* document member of the same patent family

Date of the actual completion of the international search

3 September 2002

Date of mailing of the international search report

12/09/2002

Name and mailing address of the ISA

European Patent Office, P.B. 5618 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Dhervé, G

**INTERNATIONAL SEARCH REPORT**  
information on patent family members

International Application No  
**PCT/EP 02/05093**

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5088502	A	18-02-1992	NONE	
FR 2063743	A	09-07-1971	FR 2063743 A5	09-07-1971
US 5684573	A	04-11-1997	DE 9303102 U1	05-08-1993
			DE 59405037 D1	19-02-1998
			WO 9420019 A1	15-09-1994
			EP 0687162 A1	20-12-1995
			JP 8509624 T	15-10-1996